UNITED SATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support School
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LS 303

STUDENT OUTLINE

LOAD CARGO ON AIRCRAFT

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given the mission to load equipment and cargo onto aircraft, while participating in a Departure Airfield Control Group (DACG), necessary tools and equipment, and required documentation, load cargo on aircraft, ensuring a safe and proper load without damage to cargo or aircraft, in accordance with the references. (0481.01.11)

2. Enabling Learning Objective: Given the mission to load equipment and cargo onto aircraft, while participating as a member of a Departure Airfield Control Group (DACG), necessary tools and equipment, and required documentation, in accordance with the references:

a. Conduct appropriate inspection of cargo. (0481.01.11a)

b. Direct loading of equipment and cargo on the aircraft. (0481.01.11b)

c. Identify different types of aircraft. (0481.01.11c)

d. Secure equipment and cargo to the aircraft deck using appropriate restraining devices. (0481.01.11d)

e. Identify the different types of material handling equipment. (0481.01.11e)

OUTLINE

1. CONDUCTING INSPECTION OF CARGO.

a. Joint Airlift Inspection Record DD Form 2133. Its purpose is to indicate to the aircrew loadmaster the accomplishment of the required inspections. Due to the joint

responsibilities involved it is necessary to prescribe, accomplish, and document joint inspections before loading. A qualified unit representative, a member of the DACG, and the TALCE, will perform this inspection. The TALCE will fill out DD Form 2133. The deploying unit will correct any discrepancies.

b. The Passenger Manifest. This is a list of personnel who will be aboard the aircraft. This will be accomplished by the transported force prior to their arrival to the airfield.

c. Special Handling Data/Certification DD Form 1387-2.

(1) Purpose. To certify that the preparation of the hazardous cargo meets all the rules and regulations for transporting and handling of hazardous materials in accordance with MCO P4030.19. For the purpose of this regulation hazardous materials means explosives, flammable liquids and solids, oxidizers, corrosive materials, compressed gases, poisons, irritating materials, etiological agents, radioactive materials. (**NOTE**: These items may come in vehicles, batteries, air conditioners, etc.)

(2) Preparation Responsibilities.

(a) Certifier. Only personnel who have attended the formal hazardous cargo certification school and meet the requirements of paragraph 3-5 of MCO P4030.19 are qualified to fill out and sign DD Form 1387-2. (**NOTE**: The penalty for falsifying DD Form 1387-2 is a $10,000 fine and one-year confinement.) The deploying unit will provide these personnel.

(b) DACG. Although you will be able to handle and recognize hazardous materials, you cannot certify a DD 1387-2. It is your responsibility to bring all hazardous materials in the load to the 1387-2 certifier.

(c) Placement of DD Form 1387-2. The 1387-2 must be on the hazardous cargo where it can be seen and read by the loadmaster. For vehicles on the windshield, on pallets it must be on the outside so it can be seen and read by the loadmaster.

(d) Shippers Declaration.

d. Pallet identifier.

(1) Purpose. To identify the pallet's cargo and position in the aircraft and what load/chalk it belongs to.

(2) Preparation. It is to be filled out by the DACG. Two copies will be filled out. One will be placed on the front of the pallet and the other placed on the side of the pallet, stapled to the side net. (**NOTE**: During inclement weather they will be placed inside plastic bags.)

e. Load plan.

(1) Purpose. Its purpose is to ensure the safe and efficient use of the aircraft. The load plan must comply with aircraft safety, weight and balance, and floor load restrictions.

(2) A load plan properly planned and coordinated will go on the aircraft quickly, safely and with minimum difficulty.

2. ARRIVAL/DEPARTURE AIRFIELD OPERATIONS. Arrival/departure airfield operation consists of four separate areas of activities: the marshaling area, alert holding area, call forward area, and loading ramp area. The responsibilities in these areas are shared with the deploying unit, AACG/DACG, and Tanker Airlift Control Element (TALCE) within each area. The TALCE are air force personnel who coordinate the overall airlift operation at the arrival/departure airfield.

a. Marshaling Area. The marshaling area is provided by the installation or base commander of the geographic area of responsibility from which the deploying unit stages its departure. Marshaling area activities are the responsibility of the deploying unit commander.

b. Alert Holding Area Activities. The alert holding area is the equipment/vehicle and passenger control area. It is located in the vicinity of the departure airfield. It is used to assemble, inspect, hold, and service aircraft loads. Control of the load is transferred from the individual unit to the DACG at this point.

c. Call Forward Area Activities. The call forward area is that portion of the departure airfield where the joint inspection is conducted. A final briefing is provided to the deploying troops and manifests are reviewed for accuracy.

d. Loading Ramp Area. The loading ramp area, including the ready line area, is controlled by the TALCE.

3. IDENTIFICATION OF AIRCRAFT.

a. C-130E Hercules. The C-130 is a four engine, turboprop, high winged, medium assault transport aircraft designed for tactical inter-theater type missions. Missions of the C-130 include air transport, assault, air delivery, and medical evacuation.

(1) Capabilities.

(a) Weight restrictions. Allowable cabin load (ACL) is 25,000 pounds for peacetime planning. ACL may fluctuate according to mission.

(b) Palletized cargo.

1. Maximum number of 463L pallets is six.

2. Pallet weight restrictions.

a. Pallet positions 1 through 4 maximum weights are 10,355 lbs.

b. Pallet position 5 maximum weight is 8500 lbs.

c. Pallet position 6 maximum weight is 4664 lbs.

(c) Pallet size restrictions.

1. Maximum height position 1 through 5 is 96 inches.

2. Maximum height position 6 is 76 inches.

b. C-141B Starlifter. The C-141B is a high wing, four engine, heavy transport aircraft designed for strategic, inter-theater type missions. Missions of the C-141B include cargo and personnel transport, air delivery, and it can be used for medical evacuation. This turbofan aircraft is the backbone of the strategic airlift capability of the US Air Force.

(1) Capabilities.

(a) Weight restrictions. Allowable cabin load (ACL) 46,000 pounds for peacetime planning. ACL may fluctuate according to mission.

(b) Palletized cargo.

1. Maximum number of 463L pallets is 13.

2. Pallet weight restriction.

a. Pallet positions 1 through 12 maximum weights are 10,355 lbs.

b. Pallet position 13 maximum weight is 7,500 lbs.

(2) Pallet size restrictions.

(a) Maximum height for positions 2 through 12 is 96 inches.

(b) Maximum height for positions 1 and 13 are 76 inches.

c. C-5A Galaxy. The C-5 is a high speed, long-range aircraft for transportation of cargo and troops. The C-5A is the largest aircraft in the Air Force inventory. It has a high wing and is powered by four turbofan engines. Special features of this airplane are its front and aft loading capability provided by the hinged visor door, aft cargo doors and the forward and aft ramps. It has a full width load bearing cargo floor, the kneeling landing gear, drive-in loading, and the separate relief crew and aft troop compartment located above the cargo compartment. The mission of this aircraft is to transport oversized gear.

(1) Capabilities.

(a) Weight restrictions. The allowable cabin load (ACL) is 130,000 pounds for peacetime planning. ACL maximum may fluctuate according to the mission.

(b) Palletized cargo. Maximum number of 463L pallets is 36.

(c) Pallet weight restriction.

1. Pallet positions 3 through 34 maximum weight is 10,355 lbs.

2. Pallet positions 1, 2, 35, and 36 maximum weight is 7,500 lbs.

(d) Pallet size restriction.

1. Maximum height for positions 1-34 is 96 inches.

2. Maximum height for positions 35-36 is 70 inches.

d. C-17. The C-17 is a high speed, long and short-range aircraft designed for the transportation of cargo and troops. Four turbo fan engines rated at 40,700 pounds of thrust each power the aircraft. It is equipped with advanced airfoils and winglets to provide intercontinental range with heavy payloads. The mission of this aircraft is to provide long and short-range delivery of large outsized gear on a small airfield.

(1) Capabilities.

(a) Weight restrictions. Allowable cabin load (ACL) is 90,000 lbs for peacetime planning.

(b) Palletized Cargo.

1. 463L pallet maximum weight is 10,355 lbs.

2. Maximum number of pallets is 11 single row and 18 double row.

3. All pallets can be 96 inches high.

e. KC-10. The KC-10 is a global strategic aircraft designed with a dual-purpose mission. The aircraft functions as an aerial refueler and cargo/passenger aircraft.

(1) Capabilities.

(a) Weight restrictions. The allowable cabin load is 80,000 lbs for peacetime planning.

(b) Palletized cargo.

1. 463L pallet capacity is 26. There are 13 positions on the left side and 13 positions on the right side.

2. Maximum weight for positions 1-6 left and right is 6500 lbs.

3. Maximum weight for positions 7-11 left and right is 10,000 lbs.

4. Maximum weight for positions 12 and 13 left and right is 6500 lbs.

(c) Height restrictions are determined on the planning and buildup of the pallet due to the curvature of the aircraft.

4. SECURE EQUIPMENT AND CARGO TO AIRCRAFT DECK. There are three basic restraining devices you will utilize on the airfield.

a. CGU Strap. This device has a 5,000 lb. Capacity. It has a 22-foot nylon strap. When using The CGU strap for loading aircraft, the 6-strap CGU restraint method is used to provide supplemental restraint, and individual item restraint.

b. MB-1 device. This device has a 10,000 lb. capacity.

c. MB-2 device. This device has a 25,000 lb. capacity.

d. When tying cargo to the deck, remember to place all four chains in a symmetrical pattern.

5. MATERIAL HANDLING EQUIPMENT. Material handling equipment is the most common method of moving palletized cargo to the aircraft. There are many different types of material handling equipment used in AACG/DACG operations. We are going to discuss the most common pieces.

a. Forklifts. Forklifts are used to carry smaller pieces of cargo onto the 463L pallets.

(1) 4,000 lb. Forklift. This can carry cargo no heavier than 4,000 pounds.

(2) 10,000 lb. Forklift. This can transport up to 10,000 pounds of cargo to the 463L pallets. It can also be used to move the 463L pallets to the aircraft, one pallet at a time.

b. K-Loaders. These are the most common pieces of equipment used for moving 463L pallets.

(1) 25K-Loader. This is a self-propelled cargo transportation platform. It can lift and transport three 463L pallets up to a maximum cargo weight of 25,000 pounds.

(2) TAC-Loader. This is the same as the 25K-Loader except that it can also travel on unimproved surfaces. It has a maximum capacity of 25,000 pounds on unimproved surfaces and 36,000 pounds on smooth, paved surfaces.

(3) 40K-Loader. This one can lift and transport five 463L pallets with a maximum capacity of 40,000 pounds. The height of its deck can be adjusted to match up to rails, catwalks and 463L rails and locks.

(4) 60K-Loader. This one is capable of lifting and moving six 463L pallets at one time with a maximum capacity of 60,000 pounds. Like the 40K, its deck can also be adjusted.

c. Cochran Loaders. Cochran Loaders are wide-body loaders, which are used mainly with the KC-10 and civilian aircraft. There are two different types.

(1) 316A. This is the older of the two Cochran Loaders. It can carry two 463L pallets with a maximum capacity of 25,000 pounds.

(2) 316E. This is the newer version. It can carry three 463L pallets and up to 40,000 pounds.

REFERENCES:

FMFM 4-6.

AMC Pamphlet 36-1.